

T-WREX

Distortion

REVISED BUILD DOC V2

The T-Wrex is a distortion pedal based on a distortion pedal that was reverse engineered and posted at Freestompboxes.com. All credit for that work goes entirely to the outstanding DIY community at Freestompboxes.

B.O.M.

Resistors		Caps		Diodes	
R1	1M	C1	220pF	D1-D5	1N4148
R2	1K	C2	0.22uF	D6	1N4001
R3	470K	C3	0.033uF		
R4	10K	C4	560pF		
R5	470K	C5	0.22uF		
R6	1K	C6	1uF		
R7	10K	C7	220pF		
R8	470K	C8	0.22uF		
R9	1K	C9	1uF		
R10	47K	C10	220pF		
R11	100K	C11	1uF		
R12	1K	C12	0.0047uF		
R13	4K7	C13	0.047uF		
R14	10K	C14	0.047uF		
R15	1K	C15	0.1uF		
R16	470K	C16	1uF		
R17	470K	C17	470pF		
R18	47K	C18	0.047uF		
R19	47K	C19	1uF		
R20	33K	C20	0.1uF		
R21	33K	C21	0.001uF		
R22	680K	C22	0.047uF		
R23	10K	C23	330pF		
R24	47R	C24	1uF		
R25	10K	C25	0.0047uF		
R26	10K	C26	0.01uF		
R27	1M	C27	100uF		
R28	100R	C28	10uF		
R29	100K	C29	100pF		
R30	1M	C30	2.2uF		
R31	47K	C31	1uF		
R32	1K	C32	0.01uF		
R33	47K	C33	0.01uF		
R34	10K				

IC's	
IC1-3	JRC4580

Switch	
SW1	SPDT On/On

Transistors	
T1	2N5089

Pots	
GAIN	100kA
VOL	100kA
TREB	50kA
MID	100kA
BASS	100kC
BOOST	100kA

Notes

Boost Section

Some builders found the booster to be noisy and unpleasant. While verifying the board I used sockets for the that section and as shown in the schematic, it is pretty unpleasant. Not really something I would use by itself, but perhaps that is how it is supposed to sound. That you will have to decide for yourself.

A fix for the dirty Boost section was posted as Freestompboxes by user thn.technik. I tried his suggestions and found the result to be much more appealing so I went that way with my build. He also suggested using a 100k Ω pot for the Gain control to achieve a more linear response.

thn.technik's suggestions for the Boost section are as follows:

Resistors		Caps		Transistors	
R29	82k	C30	0.47 μ F	T1	BC548C
		C31	4n7		

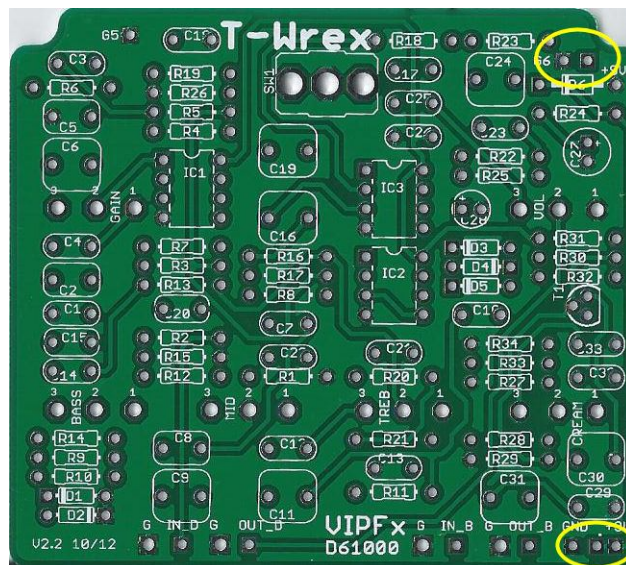
Pots	
GAIN	100k Ω
Boost	100k Ω

Be careful with the pinout for the BC548C. The one I bought had a pinout different from the 2N5089 and had to be inserted backwards as compared to the silkscreen.

For reference mine was from Mouser, 512-BC548CTA.

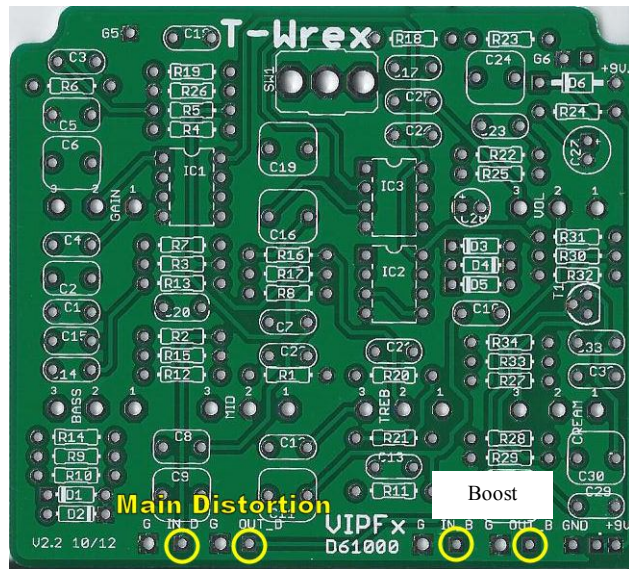
Power Connection

There are two location where you can bring power to the board. Those are shown circled below. You can connect +9v and ground to either location, but not at the same time, obviously. If you drill the power jack at the top of the box, it is pretty convenient to wire to the top location on the board. The lower position can then be tapped to power the LED's. The 3 +9v pads are directly connected, so they can be used as a pass through for power as well.



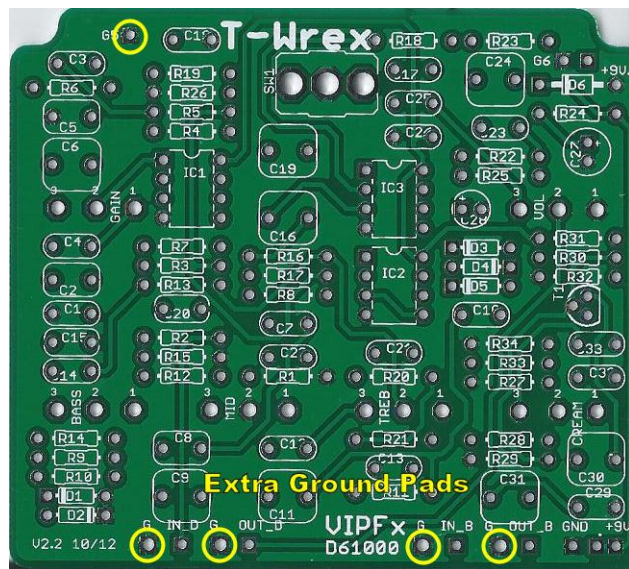
Effect in and out

The board has two independent effects on the same boards. From the schematic, those are the main distortion and the cream boost section. The pads for each are at the bottom of the board and are as they would be on any other effect, there are just pads for both sections.



Ground Pads

There are also extra ground pads next to each of the effect pads in case shielded wires are required. The extra holes are larger to allow a shielding to pass through. The pad in the upper left is a ground, but does not need to be connected to anything. It's just an extra ground pad.



Stomp Switch Wiring

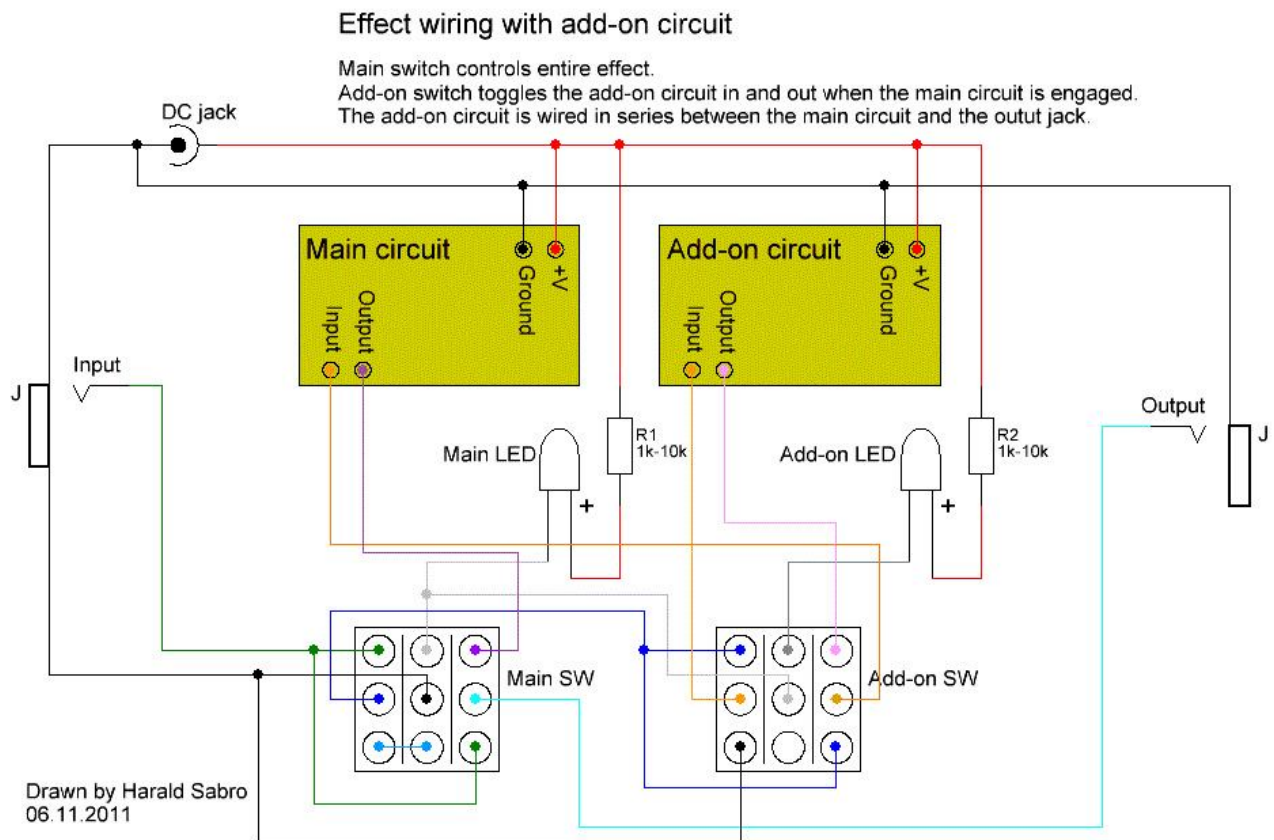
I never did find a good answer regarding how the stomp switches were wired on the original pedal. The two choices are to have the main distortion and the cream boost switch independently, or to have to the boost switch off when the main distortion is switched off.

When I say switched independently I mean the boost can be used as an effect by itself, either with or without the main distortion. Just like having a small boost like an LPB1 in front of any other distortion. Two independent pedals that are working together but are switched in and out with two separate stomp switches.

The dependant switching means that there is one main switch that turns off or on the main distortion AND the cream boost at the SAME time. The cream stomp switch will NOT turn on the boost if the main switch in the off position.

So for example, if you really like what the boost does and you always want to use the pedal with it on, you set the pedal as you like it with the boost on, then switch the main switch off. The next time you press the main switch, the main distortion AND the boost will be on. This also saves you the trouble of having to press 2 stomp switches to turn the effect off if you do use it with the boost.

To me the dependant scheme seems to be the way to go. If you choose to wire the Boost and Distortion independently, just wire them like 2 effects in series. Shouldn't be too difficult. To wire them so that the main switch controls both the distortion and the boost, wire as shown below.

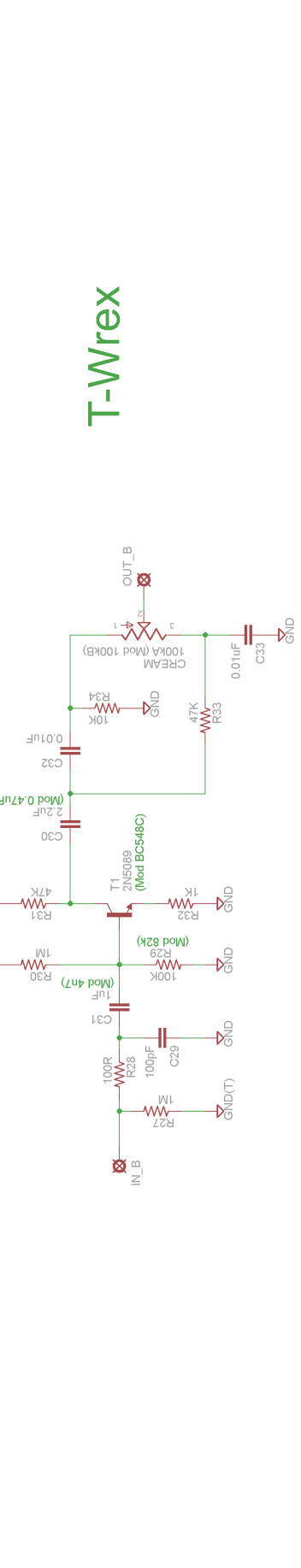
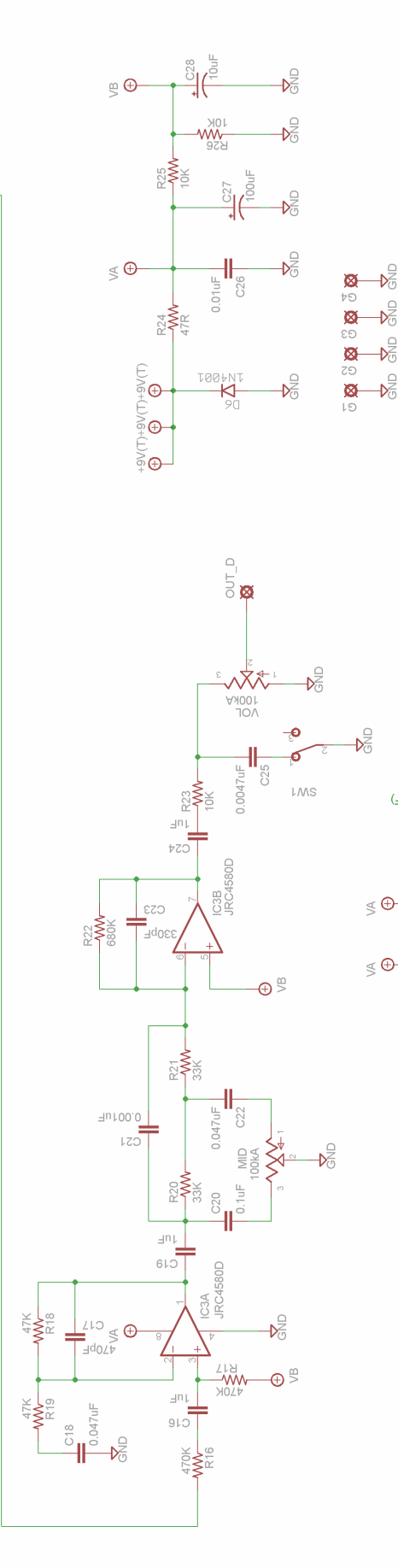
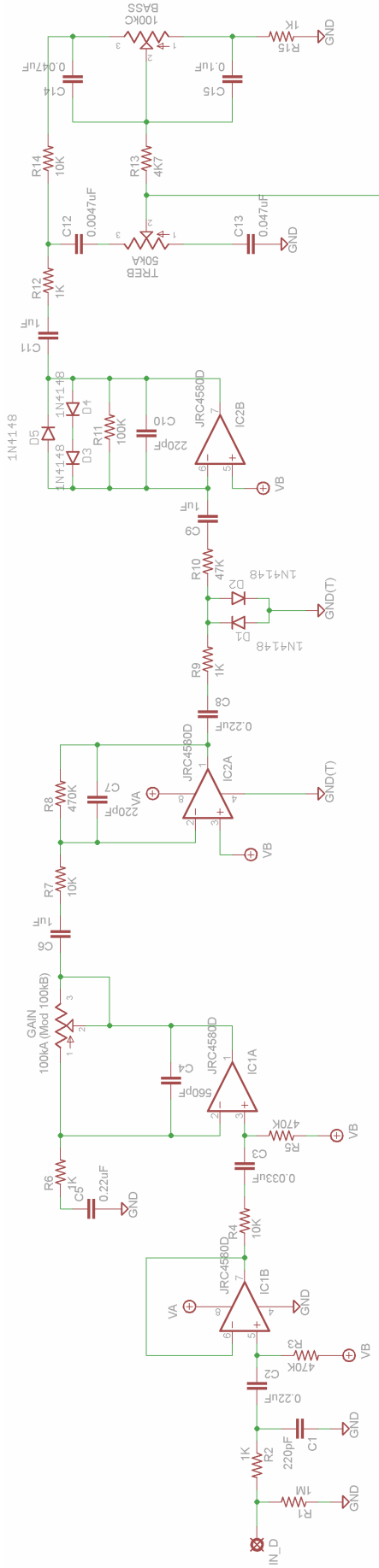


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Jacks

Fitting this project into a 1590BB is a bit of a challenge. For my build I used the low profile jacks that Brian mentions in his Baby Board guide document. The ones I used were the Smallbear version, sku 0627. Be careful with the wiring on these as they are stereo jacks. The 3 pins are for tip, ring and sleeve. Be sure to verify which is which before soldering.

Schematic



T-Wrex

Drill Template

This is the drill template I used to order my box from Pedal Parts Plus. The box I specified was the 4 Site 1590BB, code 1104. Everything fit great except the DC jack. I used an externally threaded jack from Smallbear, SKU: 0611D. To make it fit I had to install the jack so the flat spot faced down, toward the PCB, and also had to trim some plastic from the ring portion of the jack. Diagonal wire cutters made it a 15 second modification. Your mileage may vary.

If I was to build this again, I would probably use the 125BB box at PPP. It is supposed to be the same size as a 1590BB, but as tall as a regular 125B. The code for that one is 1405. The additional height would make fitting the DC jack easier.

